

AVIATION

The Oldest American Aeronautical Magazine

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Training planes ready for the day's work at the naval air station, Pensacola, Fla.

PHOTO BY PHILIP C. B. WOOD

VOLUME
IV

NUMBER
24

SPECIAL FEATURES

COMMERCIAL AVIATION IN 1923

RADIO TELEPHONE FOR AIR MAIL PLANES

TWO PIONEERS OF AMERICAN NAVAL AERONAUTICS

METAL CLAD VS. FABRIC COVERED RIGID AIRSHIPS

THE GARDNER, MOFFAT CO., INC.

HIGHLAND, N. Y.

225 FOURTH AVENUE, NEW YORK

ADAPTABILITY

Thoroughbred and Draught Horse in One

From a 7-ton flying boat to a single seat fighter is the useful range for Wright "T" Engines. The procurement of engines must be planned long in advance of the construction of planes. Therefore, the adaptability of an engine for use in many types of planes is the most reliable safeguard for the purchaser.

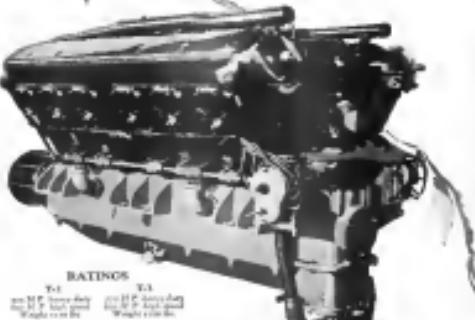
Wright "T" Engines have been installed in 8 different types of planes. Two of these types are single seat land fighters used as racers; one is a single seat sea plane; one a twin engine long distance boat; four are combined land and sea planes usable for bombing, torpedo, observation, cross-country, and spotting purposes.

Only the wide experience of the Wright Organization in correct aeronautical engineering practice and design makes possible this reliable versatility in Wright Engine Performance.

WRIGHT AERONAUTICAL CORPORATION
Paterson, New Jersey, U. S. A.



Wright "T" Engines are being used in the transatlantic Non-Stop Flight. Wright "T" Engines are now worthy competitors in the aircar races for both record single seat planes both land and sea. They are equally well adapted for the intermediate planes such as bombers, observation planes and two-seaters.



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Trade Mark

NATIONAL AIR

Independent authorities agree that the airplane is now ready for commercial transportation. A Martin Bomber, for instance, carrying 1600 pounds in addition to passenger weight, recently developed an average speed of more than 14 miles per hour.

Railroads have worked for years to clip minutes from their schedules. Present policy is even reducing rather than increasing speed. Travel by rail seems to be fixed for a long time to come

at 60 miles per hour.

How will the development of the airplane affect the country? The railroads welded a loosely federated group of states into a nation. How closely knit will this nation become when its very air is nationalized?

Martin men not only feel the responsibility of maintaining their own leadership - but also the obligation, and the privilege, of building soundly for a whole people.

THE GLENN L. MARTIN COMPANY

CLEVELAND

Builders of Quality Aircraft since 1909

L. B. GARNER, PRESIDENT
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L. D. WADDELL, TREASURER
GEORGE H. WILSON, SECRETARY
M. C. WILSON, GENERAL MANAGER

AVIATION

Vol. XV

DECEMBER 26, 1923

No. 24

Encouraging Light Plane Development

If the announcement recently issued by the National Aviation Association with regard to next year's national light plane competition is made to the possibility of also holding a light plane competition, "if sufficient interest is shown in those concerned."

That there exists in this country considerable, though perhaps not yet sufficient, interest in the light plane is evidenced by the numerous letters and inquiries Aviatrix is receiving from various quarters. This interest deserves the hearty support of all those who are concerned with the progress of aeronautical science. But simple and easy planes, which in logic will be offered for an American light plane competition, are only the first of encouragement. Another, and in the last important, is that the rates of a light plane designer be drawn up in such manner as to bring forth a rapid progress. And here we cannot help but take up again the N.A.A. suggestion that the light plane competition proposed for 1928 be open to machines with engines having a maximum piston displacement of 60 cu. in.

The wonderful performances accomplished by British light planes at the Lympne meet were made with a maximum cylinder capacity of only 45.75 cu. in., while for next year the French Air Ministry contemplates holding a competition for racing light planes limited to 67.1 cu. in. Regardless of the different engine ratings used in this country and in England—which by the way would favor us—a maximum piston displacement of 60 cu. in. for an American light plane competition seems to us like a public acknowledgment of our backwardness in this line of aeronautical development. Of course, we are assuming that the proposed American competition is one for single-surface, although the displacement of 60 cu. in. even allows for gondolas for two- and three-seater planes to be made as light plane contestants.

There is also the question whether the system of rating light planes by their cylinder capacity or their piston displacement is entirely fair or even desirable. Two engines may have the same piston displacement and yet one of them, by using a bigger crankshaft speed and a higher compression ratio, may develop very much more power than the other. This would all be to the advantage of the engine and its users, if it did not also mean a larger fuel consumption. As it is the latter item which cuts into the pocketbook, and as primarily interests the light plane user, it seems to us that fuel consumption should be made the basic criterion of light plane ratings.

The Grand Prix for light planes held near Paris last summer offers an instructive example in this connection. There the competing machines were limited as net weight to 550 lb., not including the pilot, but including 44 lb. of gasoline and oil. With this fuel allowance the machines had to satisfy a performance climbing test of 1550 ft. in 26 sec., and fly, in

the race proper, a maximum distance of approximately 200 mi. The plane covering the greatest number of laps is chosen of this distance was declared the winner.

We believe that this "formula" offers an excellent working basis for drawing up rules governing the proposed American light plane competition.

Aerial Touring in England

WENRANCE SPERRY is touring England in his "Mons" plane. It is perhaps a little in advance of the times, but the adaptability of this trusty bird has always been one of the attractive features of his charmed life, not to give full credit to his expert pilot skill. It is interesting to recall that this apparently young pilot has been flying for eleven years.

His latest trip abroad is typical of the way in which he travels. He got his little plane aboard ship with his traps and had it put ashore at Plymouth. He flew to Croydon and is now doing just what he does at home—he flies to every place he wants to visit. In a recent letter he tells of the pleasures of an aerial tourist in England.

The airplane is a healthy way of traveling over here—much better than lugging around London, as it takes one out to the different golf courses and gives one the very best opportunity of seeing the beautiful English countryside.

"Croydon is a joy, and a wonderful example. I landed there, and instantly three golfing companies wanted to be my host. I wanted to go to Elstreewood Downs Golf Club and it did not take me five minutes to get a caddy and get the trip organized—it is just like touring Europe in a Rolls-Royce—the man assists me with my baggage, and I take my airplane for fifty cents a day—truly a unique place in the United States for fifty cents a day! When I stayed at the golf club over night the Croydon officials telephoned to enquire if I was coming back as they were keeping their night equipment in for me. You can buy gasoline at my aerodrome in England."

It is refreshing to read of such pleasure and convenience. All we in this country can do is to hope and pray.

Here and Abroad

THE critical condition of the Army Air Service, caused by a depleted personnel and obsolescent equipment, is in strong contrast to the situation of the British and Italian air forces which are rapidly being brought up to these latter times.

The picture of the Italian air force review near Rome and the outline of the British air force expansion which appear in this issue, furnish much food for thought in view of our serial helplessness.

LAWRENCE H. O'ROURKE

VIRGILIE E. CLARK

EDWARD F. WARDEN

RALPH H. UPTON
CONTRIBUTING EDITORS

Metal-Clad versus Fabric-Covered Rigid Airships

Metal Envelope has Advantage of Fire Resisting Quality, Greater Gas Tightness, Durability and Lesser Weight

By RALPH UPSON

Aircraft Development Corporation, Detroit, Mich.

The place of the airship or dirigible as a type for long distance heavy traffic service, has been as empty discussion as that there would ever be in question of the feasibility of flying man-made land vehicles, particularly at night or over water, today as it then. The airships have not been more generally taken up in this country.

The Question of Safety

Suppose we accept for the moment the common view that the greatest obstacle to all aircraft development is popular distrust, particularly as to safety. Then unquestionably the best way to increase the use of airships is the fire test. Numerically this risk is probably small. In the whole history of the Zeppelin passenger lines (traveling to nearly 4,000,000 passenger-miles) not a single passenger has been lost. But judging from experience with experimental and military "ships" that risk need certainly exist and seems in fact the only serious one in the ordinary operation of airships.

Now, first do not start without cause in airships any more than in houses, and methods of preventing must be based on a scientific study of these causes and their effects. Hence if engineers fall into the notion that popular distrust is holding back airship development, it is nothing but a self-banded affit. For it is not a simple engineering responsibility to prove all ships safe for use.

The simplest with which I have concerned myself as a group of men who believed that this was an engineering problem which could be solved by engineering methods. Given after many years of study and experiment much remains to be done. But enough has been done to show that the fundamental errors are sound, that a fire-proof airship can and will be built. And the wonderful thing about it is that instead of introducing weight, everyone safety and other good qualities seem all to be gained with the type of construction. Airship engineering is 90 per cent detail, which is set out in place in this kind, but the area stops in this revolutionary development are quite simple.

Main Steps in Development

First, to be considered, are the direct causes of burning fires. These must be eliminated entirely all at present known (article of warfare) fall under one or more of the following:

- 1. Static sparks
- 2. Electric wires
- 3. Engine fires
- 4. Smoking.

But such fires occur and spread only through the medium of combustible materials which may be classified as follows:

- 1. Gas
- 2. Fuel
- 3. Fabric.

Unless, if we can render the materials fireproof, the desired result is accomplished.

On paper the next thing to do with hydrogen gas is to undertake the job. Helium has the same qualities and fire qualities, but it certainly has no use but for commercial purposes, i. e., coffee, from the following disadvantages:

- 1. It is twice as heavy as hydrogen.
- 2. It is a hundred times more expensive.
- 3. It cannot be used as fuel.

So, we must seem to be game-located in certain locations, and then to use just that about 2 per cent of the total material gas by volume.

Fire-Proofing the Airship

Whether helium is used or not, we cannot indefinitely the necessity of fire-proofing the rest of the ship. For if the envelope

burns away even partially, it is small consolation to have a non-inflammable gas. On the other hand any gas can sustain a flame fire-resistant envelope is an after non-inflammable. This is especially true if the envelope is of metal, which has the added advantage of being lighter and less dangerous than "stainless." A metal-clad (fireproof) envelope, particularly with heavy fuel-oil engines, is no all-weather purpose fireproof, whereas a conventional fabric envelope "burns" even when filled with helium, is still quite inflammable.

Having determined that the best way to keep the gas from burning is to protect it in a metal envelope, even then as an article of flame, we come next to the problem of insulation. There are a number of ways to do this, but the most insuring of helium, by enclosing the envelope in a metal

mantle, the greatly improved insulation substantially of the metal cuts down the temperature difference between gas and air, and effectively stops any loss of gas from the envelope.

Advantages of Metal-Clad Airship

Finally, for equal factors of safety, it appears that no new construction can be made considerably lighter, thereby compensating for the deficient lift of the Schatz lift factor given in carrying capacity result from the imposed heat control, low deflection and the cutting down of metal.

The accomplishment of such results in any ship of modern use may seem preposterous at first sight. For instance, it is easy to calculate that the substitution of metal for fabric in a regular Zeppelin "bag" would save almost as little lift per cargo at all. But by changing the design so that the sheet metal of the envelope becomes part of the structure instead of a mere cover, results will very different. Furthermore, the metal may be made perfectly fireproof, and this new differentiation among all the following parts of a present day rigid airship: Outer envelope, inner pressure, skin, skin gas pressure wires, setting, and essay of the rigid structural elements.

In this manner a large amount of weight can be saved and safety factors are increased in the metal-clad construction. Furthermore, it is remarkable enough to say that the metal-clad envelope is fire-resistant and fire-resistant qualities, the metal-clad envelope will set a new mark in the economy of materials.

An Authoritative Foreign Opinion

With the materials at present used in the construction of airship envelopes and gas cells are unsatisfactory from the viewpoint of economical operation as well as that of safety. It is generally acknowledged that airship crews, the distinguished Italian aeronautical engineer who was one of the creators of the Italian dirigible type of airship, are particularly qualified. Materials of natural fiber, rubber, gold-beater's skin, are not sufficiently durable. The present envelopes, which nevertheless count into the principal part of the construction in terms on account of their size and the cost of their manufacture have to be replaced on quite short a time interval. This is all the more so because these envelopes necessitate the immobilization of the engines, and make reserves necessary, thus increasing overall expenses.

"We have in Italy excellent rubberized materials, but they probably have their waterproof quality; we likewise have an anilin-dyed fabric, but they quickly lose their

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8.8 Levathane, but this becomes brittle when exposed to the air.

Passenger traffic would, of course, only be one of the sources of revenue of such a transoceanic sleep service. The carrying of first class mails and parcel post would offer another important source of revenue, the more important as mails are more remunerative per unit of pay load than passengers.

Airships for Mail Carrying

The possibilities of inter-continent airship mail service were dealt with in an interesting paper read before the In-



Italy's aircraft as a first class air power—300 military planes of the new Royal Italian Air Force concentrated near Bressana Bottarone by Premier Mussolini on the anniversary of the assumption of government power by the Fascist

"The envelopes will then have no intrinsic value at all, because their weight will cost at the rate of a hundred per cent, and they will figure on the balance sheets of aerial dirigible companies as working expenses instead of installation expenses.

"The problem will therefore have to be solved before the opening up of air transportation service can be guaranteed. It is a problem which is not easy to solve, and it must be solved with a real understanding of the construction of airships, in order to arrive at a practical result. This result would place airships side by side with sailing vessels, even from the point of view of their cost price."

Metal-clad Airships vs. Ocean Liners

A further point, important economically speaking, is that large airships would require no great accommodations. This is particularly true on the basis of carrying capacity. The U.S. Levathane four-masted liner, carrying 20,000 lb. of dead weight material for every passenger carried, whereas it is estimated that a metal-clad airship built for transoceanic service with a passenger accommodation of 200 would carry only 1600 lb. of dead weight material per passenger. This is another factor which would greatly reduce construction cost per unit of revenue rendered.

It has been reasonably figured that with such a large, modern transoceanic airship the trip from London to New York would be made in two and a half days as against six to the U.S. Levathane, and that a round trip allowing for necessary stops from the main route. Such developments may mean in the near or distant future, but it is perhaps not a rash prophecy to predict that the next generation will see railroads and its steamships supplemented by a complete system of airship communication by air."

Air Mail Planes to Have Radio Telepho

Successful Experiments Made at Schenectady, N. Y., Promise To Solve Numerous Problems of Flying

A further advance in commercial aviation is forecast with the announcement made by the General Electric Co. of Schenectady, N. Y., that Postmaster General New has ordered all Air Mail planes to be equipped with radio station and receiving sets, so that pilots may keep in continual communication with land stations while on the air.

Experiments with this device have been under way for some time and have proved successful. With every surprise is the

on the mail planes will be invaluable, in the opinion of the development.

The feasibility of using radio sets, both transmitting and receiving, as the standard type of D.H. plane of the Air Mail has been fully established by preliminary tests recently completed at Schenectady, N. Y., under the direction of radio engineers of the General Electric Co. Air Mail Pilot Jack Knight piloted the plane

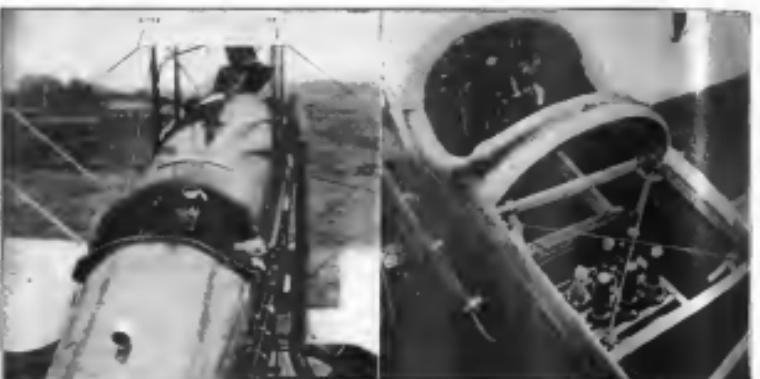


Photo: Knob & Warren

Radio telephone experiments with Air Mail planes—Left, Air Mail Pilot Jack Knight, in the cockpit of Air Mail plane No. 245 with which the trials were made—Right, the vacuum tubes of the radio set, housed behind the pilot's seat.

generalized mail service using radio sets, the various problems in finding, bringing equipment into and obtaining weather reports are at a present measure solved.

Advantages of Radio Phone

The advantages are obvious when it is realized that in time of heavy fog or severe rain storms, especially at night, a pilot might strip out of his course and find difficulty in locating his next landing station, even though aided by the powerful electric beam lights, which have been set up along the route. In the winter time the landing stations can talk to each other, thus the pilot can immediately detect from the ground, and then steer his landing.

There are also times when a plane has to make an unexpected landing, or when it is desirable to report to the landing field the presence of unusual atmospheric conditions. It has happened several times that Air Mail pilots have been forced to land at remote and isolated spots in the Rocky Mountains. When this occurs, with a radio outfit installed the pilot can immediately call for help, and the station of landing house and perhaps days for a searching party to find him. It is also an advantage to be able to transmit information to the pilot between stations, should emergency arise.

For all three purposes, as well as others, radio equipment

valued by the General Electric Co. radio department, in cooperation with G. F. Eggers, general superintendent of Air Mail Service, and Elmer Riddle, radio traffic supervisor. It is held to be, without question, a big step forward in the commercialization of airplane radio.

Powerful and highly efficient, the equipment is at the same time so simple that anyone can operate it successfully after brief instruction. In the Schenectady tests, Pilot Knight was familiar with radio apparatus, yet on every mail flight he operated it with complete ease.

Mail planes carry only one man, the pilot, in order to reserve space for the "pay load." That is, the mail. This means the pilot must operate the radio equipment in addition to flying the ship. Consequently the equipment must be positively so easy to operate as an ordinary telephone. This requirement has been fully met and was demonstrated by the tests at Schenectady.

Simplexity of Operation

The pilot, in order to talk, merely throws the radio switch conveniently mounted under his seat, so the transmitter and set turn a large knob—the antenna, variometer—and a meter mounted on the board in front of him shows a red

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arrow reading. That is the whole process of tuning the transmitter. After he has done that once, he locks the knob in position, and it is only necessary to throw the handle front, forward, to "receive," as desired.

The receiver is of the "super-heterodyne" type, an selected source of sensitivity and high selectivity, the receiver section being the "super-heterodyne" receiver, which is complicated, in reality this one is very simple. Due to its special design, there are only two knobs necessary to adjust in tuning. It is not possible to "tune in" the plane, as well as an ordinary radio telephone, although this may be done and is fact done at the landing station. The pilot must tune his pitch back and forth to talk or listen, but that requires only a fraction of a second.

New Filament Tubes Used

The new vacuum XL or thoriated tungsten filament tubes are used throughout, and contribute largely to the successful operation and high efficiency of the apparatus. The transmitter utilizes five 50-watt XL tubes similar to the UV 202-A, and the receiver utilizes seven UV 189 tubes, which operate solely on dry cells.

The radio equipment necessary for the pilot of the 50-watt transmitter system is supplied by a 50-D, 700-watt generator, operating from a 22-volt battery and delivering direct current at 2,000 watts. The storage battery charges continually while the engine is running so exactly the same manner as the starting battery of an automobile.

The antenna for the mail plane radio equipment consists of a 200 ft. trailing wire. This is carried on a special mast on the right and let out when the plane has taken off. A system of clamps holds the wire taut and runs along the front of the plane, connected together by heading steps, is used for the ground connection.

During the time the installation work for the preliminary tests was in progress it rained constantly for two days and nights. As the equipment was only covered by canvas, it became thoroughly saturated with moisture, so much so that its aluminum brackets and other parts were covered with rust, while the dials of water had evaporated.

Tests Very Successful

For the tests were off with great success. The apparatus was tested out on the ground without being dried, and operated perfectly, as take off failures occurring. During one of the trial flights both rain and snow were encountered at times, neither of which interfered with the operation of the equipment.

The first tests comprised a number of trial flights from Schenectady. The ground station was the central receiver of U.S.A.C. arranged by the Department of Commerce. The longest flight made from Schenectady was when the pilot returned to Headwaters Field, L. I., as far as a distance of about 125 mi., during which continuous communication with him was kept up.

The general message received was "I am in sight of the landing field and now going to try to land successfully." This came in relatively strong, indicating that the equipment could cover an even greater distance and that the maximum range of 100 watts output and 100 mi. range, is undoubtedly conservative.

Additional trials were subsequently made by Pilot Knight between the Air Mail stations at Ogdensburg and North Platte. These at an average height of 2900 ft. No messages were likely to be at the Ogdensburg station although only a mountainside it was used. North Platte is 245 mi. from Ogdensburg. Knight succeeded for one month, every ten minutes of his flight.

"Plane 245, Air Mail Service, broadcasting from the air, air over Grand Island, Neb." was one of the messages received.

The British Air Force Expansion

Interest in particular with regard to the powerful expansion of the British air force were recently made public by the

Second Bureau, Bureau of State for Air. The Bureau said among other things—

"We want to make the new Force as efficient as possible but we also want to organize it as economically as possible. On the ground of economy, therefore, we are going to rely to a great extent on the Territorial Army, which is a substantial element of what I will call non-mechanized personnel. Specifically, in the first place, there will be a large body of highly trained regular squadrons for the difficult work of fighting. But, in the second place, there will be what I will call, for want of a better word, special reserve squadrons and auxiliary squadrons for the less difficult work of bombing. The reserve squadrons will be constituted approximately one-third regular personnel and two-thirds reserves, the former being personnel to be organized by the one hundred of skilled artisans, who will stand up for a short period of training in the immediate neighborhood in which they live.

"The auxiliary squadrons will be organized and equipped as a body somewhat similar to that of the Territorial Army, each squadron being provided with a small nucleus of regular personnel for inspection and administrative purposes, personnel to be organized entirely of non-mechanized personnel, and the work will be looked after by the large number of civilians.

"Thirdly, and this is a feature of the expansion to which I wish to draw your particular attention, we hope to be able to carry out a great deal of the work of these three kinds of squadrons that is now carried out by regular personnel by means of mechanized equipment. In the regular squadrons we hope to be able to do at least 75 per cent of the work—that is, almost all the non-mechanized work—by civilian labor. For almost all the non-mechanized, for all the special reserve squadrons, and all the auxiliary squadrons it is hoped that all the repair work, other than major running repairs, will be carried out entirely by civilian labor and that all additional stores depots that may be required will be manned by civilians.

Regarding a Pulitzer Race Account

A Letter from Lord A. J. Wilson

Editor, Aviation

I am sorry to see your magazine and aid in assisting me to rectify certain impressions which now exist among readers of current aviation publications.

An article recently appeared in *The Aeromarine Digest* expressed "How I Won the Pulitzer Race" and my name was mentioned as the last to be listed. Had this story been a little less heroic, and a little closer to what a reasonable person might expect from a normal pilot, it might have caused me considerable inconvenience.

In view of the fact that you will be rendering a great service by merely publishing this letter, it will hardly be necessary to assure the privilege of considering the predecessor which brought the Pulitzer race into existence.

May I be specifically quoted as denying and disavowing the authorship of the story complained of? Permission to advise my name to this story had not even been requested.

It is sincerely hoped that you will find it convenient to grant this request.

Ed. A. J. Wilson

U. S. Naval Air Station, Anacostia, D. C., Nov. 21, 1933

Book Review

REGULATORY AERONAUTICS. A descriptive Catalogue of Books and Expressions Illustrating the Evolution of the Aeronautics and the Aeroplane. (Part I, pp. 170, Part II, pp. 136. Mudge Bros., 34 & 35 Crofton St., New Bond St., London, W.1.)

The illustrated catalog, in two parts, lists a great many books dealing with aeronautics, with an effort of great detail or difficult to procure. It will therefore be of great interest to people intending to establish an aeronautical library, or completing one. These accurate reproductions of new aeronautical prints illustrate the catalog.

Two Pioneers of American Naval Aeronautics

Comdr. J. C. Hunsaker, U.S.N., and Comdr. H. C. Richardson, U.S.N.

In view of the unscrupulous strides made by American Naval aviation during the present year, it is timely to give here a list of distinguished sailors of the two naval services who have borne in very high esteem the rank of Commander. C. E. Bissell and Comdr. H. C. MacFarlan.

Comments from Stakeholders

Conrad J. Japouse C. Hinschbar, 16 U.S. 3-3 N., who left the Bureau of Archaeology, Washington, D.C., in and for



Condr. J. C. Hunsaker.
U.S.N.M. (C.C.)



Comdr. H. C. Richardson,
U.S.N. (C.C.)

London, England, where he has been appointed *Joint Naval Attaché* at the American Embassy, was born at Croton, Iowa, in 1888, the son of Walter J. Blymire and Alice L. (Gibson) Blymire. He received his early education in the public schools of Detroit and Saginaw, Mich., and from 1904-05 attended the U. S. Naval Academy. During the year 1909 he was drafted as a Midshipman in the U. S. Navy. From 1909-12, he took a post-graduate course in Naval Architecture at the Mass. Inst. of Tech., and in 1912 was appointed Assistant Shop Superintendent at the Boston Navy Yard. In 1913 he was appointed Instructor in Aerodynamics at the Mass. Inst. of Tech. His appointment was terminated in 1915 when he obtained accreditation abroad. Returning to the United States, he was engaged from 1914-16 as Instructor in Aerodynamic Engineering and Research on Aerodynamics, at the Mass. Inst. of Tech. Application of the results of aerodynamic research in the design of American aircraft was stimulated by Commander Blymire, first by his translating and making available Eiffel's work, "Resistance of the Air," and later by writing the first wind tunnel at the Mass. Inst. of Tech. Under his direction, original research was conducted at the Mass. Inst. of Tech., and the findings were applied in the design of aircraft. In 1917 he was appointed to the Army's newly-organized Engineering Research group of graduate engineers, and when the United States entered the war in 1917, was placed in charge of the technical services of the Army and Navy and the A.E.F. air forces.

and George C. Westerhoff, the NC type of flying boat which was the first seaplane to fly across the Atlantic Ocean. In recognition of his distinguished services, Commander Westerhoff was awarded the Navy Cross.

After his retirement from the Navy, Commander Westerhoff has written the following books: "Stable Hydraulics And Aeroplane Stability." He is a member of the American Society of Naval Architects and Marine Engineers, the American Society of Naval Architects and Marine Engineers Association, Royal Naval Association, Royal Association of Officers of Great Britain, U. S. Naval Institute and the American Navy Club.

Commander Richardsons

At the Mass. Inst. of Tech., application of the results of aerodynamics research in the design of American aircraft was stimulated by Commander Bisselius, Rely by his stimulating and inspiring work, "Elementary of the Aerodynamics of Airplanes," and later by writing the first wind tunnel test at the Mass. Inst. of Tech. Under his direction, a research team was organized at the Mass. Inst. of Tech., and the findings were put at the disposal of American aircraft builders. He also taught an aerodynamics course to aeronautical groups in government and industry. The University Professor served the year in 1917, was placed in charge of the technical services of the Army and Navy and the U.S. A.R.F. air forces.

MARCH 1970

VI A T I O N

ferred from 1907-11. From then 1911-16, he was assistant 1911-16, Naval Constructor, Philadelphia Navy Yard, 1916-17, Bureau of Construction and Repair, Aviation, 1917-21, Construction Office, Naval Air Station Pensacola, Florida, 1921-22, Superintendent, Construction Bureau, Buffalo, N.Y., 1922-23, Third Engineer, Naval Aircraft Factory, Phila- sferred in a divisional status. The 133rd Squadron in Alabama became the 114th Squadron for assignment to the 36th Division, and the 221st Squadron in Indiana was transferred to the 36th Division and changed its designation to the 133rd Observation Squadron.

The observation squadrons pertaining to the 36th Division

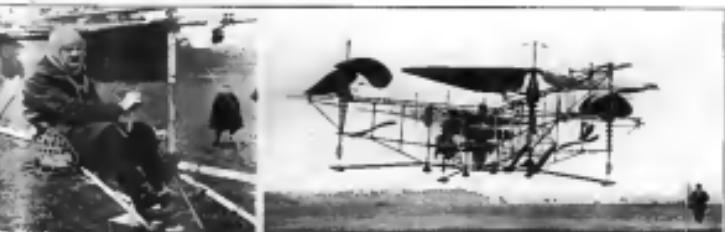
Washington, Indianapolis, Pittsburgh, Washington, Boston, and Philadelphia. For his services he received the Navy Cross. The Philippine government in recognition of the notable part he played in the defense of the islands, awarded him the Order of the Sun.

The National Guard Air Service

The annual report of the Chief of the Minas Gerais, just published, lists the National Guard Air Service units following:

The strength figures cited above show a gain of 3 officers and 107 enlisted men over the figures for June 30, 1922. The 11th Cavalry, which had been the 11th Cavalry until the 11th Lancers were disbanded, December 31, 1921, had two regiments. The figures given by last year's report have been transposed to the present report to facilitate comparison.

Successful Vertical and Horizontal Flight



Left, M. Etienne Dethier, engineer and pilot of the helicopter bearing his name, in the pilot's seat. Right, the machine is lowered right during trials held at Les Bordes, France where the helicopter carried a circular course, returning to its starting point. The flight was made at an average height of from 10 to 15 ft.



A large aircraft plant—Planes operating, work in progress of assembly and finished planes on the assembly floor of the Glenn L. Martin factory at Cleveland, Ohio, during Navy Day celebration.

Aeroncaire Plant Almost Inactive

Within the past few weeks Aerocaire & Motor Co., of Keypoint, N. J., will have completed the Auto-constant speed propeller plant. The first two engines of this model are in course of erection. As far as receipt of this contract and the fact that the company has no other airplane production orders on its books, a large number of昔日 machines have recently been released. Sheet patterns, gages, dies and working tables used in constructing the Martin Bombers, which cost the company thousands of dollars, are now off and ready to start again. The plant which is now idle, will be using a crew of 100, the plant which is idle, will be used for other manufacturing purposes unrelated to aircraft. It is learned that no permission has been made by the Government to utilize or store the production fixtures referred to. They are seen of no value in the new plant and want be disposed of at a trifling price for scrap metal and lumber.

On the small amount of experimental and engineering work, the following details of the company to date are as follows: The second of the two right Flying used planes ordered by the Post Office Department is now nearly completed and the company is doing some very interesting work for the Army on a variable cylinder wind tunnel design of Paul G. Elsener, sheet airplane engineer. The work accomplished by the company in developing dual-control aircraft, the first of which is now in the hands of the Army, and the right Flying used planes have given them valuable experience and exceptional facilities for this kind of work.

The Aerocaire Airplane has completed another series of continuous commercial flying between Detroit and Cleveland and the boats are now at the Keypoint Plant for overhauled while awaiting decisions as to whether they will be placed in service on the short haul between the two cities.

The motor division of the company, which is located in a modern concrete and steel structure, is engaged in machining a number of less compressors. Liberty engines with new cylinder blocks and other parts above the crankcase which will increase the horsepower from 480 to 500. Work is also going ahead on an order for the Aerocaire Model U-250 280 hp six cylinder engine for the Navy.

A 100-horsepower part of the Aerocaire plant at Keypoint is now devoted to building station bodies for Cadillac automobiles.

Chicago News

By Otto Koenig

On W. Gardner and Mr. Hartman, a druggist, greatly annoyed their eight-year-old son during their recent visit to the Midwest from their home in the Los Angeles, when Hartman took numerous photographs of the largely dislocated Wright buildings. His sons were let to mark the field for the farm, but no boundary lights were used. W. M. Meyer, who painted the sign on both wings, landed as smoothly as he does in broad daylight.

The winter, in company with E. B. Roads, flew over the financial groups at the Dayton and Northeastern conventions Saturday afternoon, Nov. 24, displaying an ad and dropping leaflets.

John Hitler and LaFerne Cavender, accompanied by friends, flew their Curtiss to Rockford, Ill., Sunday morning, Nov. 25. They spent the day carrying passengers.

One Palmetto has purchased a Curtiss "10" which will easily fit to take an OX in place of the Hispano. He has leased a 2000 ft. plane to the local business at one dollar a week. This has been considerable fun and made business visit the city all week which made flying very difficult. For this reason there has been little activity at the field, other than the usual passenger carrying and pleasure trips by the "tourists."

Strenuous Flying

According to the *Area 3 News Times*, H. F. Conrad, a former district attorney, and Hardesty Wimberly, both of MI 2080, "who will be unidentified because on an airplane made a 2000 ft. flight to earth" near Washington, D. C., recently failed to pay \$10 each because they landed in a rural portion of the city. They were arrested and held in the jail of the city, and held all day by a sheriff until they paid the fine.

The same newspaper reported that Sergt. Lloyd Riddell of Brooks Field, Tex., was arrested by the military police on Nov. 25 on the charge of operating an airplane while intoxicated and of transporting liquor in an airplane. He was arrested late at night in a San Antonio restaurant where white citizens had to look for him to see who he was. Wimberly declared that he was compelled to leave the plane and escaped before the police arrived.

U. S. ARMY AND NAVY AIR FORCES

Time Extension for Joining A.S.O.R.C.

The War Department has extended for one year the period in which veterans of the War of 1914-18 are eligible for appointment without examination, other than physical in the Army and Navy Air Forces. The extension of this time limit by three months is to that effect has been made in all Corps Areas and Department Commands.

The previous time limit on this class of appointments expired Nov. 13, 1932. This date was fixed in 1930 during preparation of the Regulations for the Officers' Reserve Corps, which were published Aug. 1, 1930. It was then thought that to have 2000 veterans in the Army and Navy Air Forces available for filling the nature and requirements of the Officers' Reserve Corps, that all interested would be afforded an opportunity to apply for commissions.

However, unanticipated delays were encountered. The work of building up the Organized Reserves was hampered by successive reductions of the Regular Army and by centralized appropriations. At a later date, the War Department and Congress of the Corps officers did not put together what is considered to be an almost unbreakable record of the Korean War. These veterans are considered as trustworthy and responsible as any in the Territory of Hawaii, due to continuous low-temperature climate, extremely dense underbrush, constant rain and deep permafrost qualities with perpendicular sides.

The officers had found it necessary to serve in subordinate posts, other officers to direct their own organizations at a level 100. Many were not in a position until late in 1931 to determine whether they could devote the required time to further military preparation. The number of applications in the past few months is an indication that they are now becoming able to make and destined of making their services available in any new defense system.

The following table gives the strength at the end of each month of this year:

January	50,518	June	50,481
February	50,518	July	50,481
March	52,658	August	50,443
April	52,658	September	50,443
May	52,753	October	50,443

The total increase during the present calendar year will probably more than double that of 1932. The increase during 1932 was 6,051. The increase for the first ten months of this year totals 9,814 with November promising to be the record month of that year.

strength, as during the first ten days more than 2,500 applications were received.

The War Department has concluded, therefore, that an extension of the time limit for admission of former officers in the Officers' Reserve Corps without examination other than physical will afford opportunity to many World War officers whose experience will constitute a valuable asset to our national defense. That these officers are themselves desirous of this additional opportunity is indicated by the recommendations made by the various Officers' Associations in their annual conventions at Detroit, Mich.

Scouting for a Long Reconnaissance Party

A report recently received from the Bessonneau Department of a search made by pilots of the 11th Composite Group, stationed at Wheeler Field, for a reconnaissance party and one from the 11th Infantry, consisting of one officer and three enlisted men, arrived in the mountains and probably lost in an almost inaccessible region of the Korean War. These veterans are considered as trustworthy and responsible as any in the Territory of Hawaii, due to continuous low-temperature climate, extremely dense underbrush, constant rain and deep permafrost qualities with perpendicular sides.

On the suggestion that the Commanding Officer of the 11th Composite Group would consider that this reconnaissance party could be of value in aiding in the search for the missing men, he had planes in the air 45 minutes. The search was made at 8,000 ft. m.s.m. and during the missing three planes were continuously flying around the range. Only on a few occasions were they able to come over between the ridge of the range and slopes. All attempts of planes on these missions reported extremely unfavorable weather conditions, and several planes lost control and dived into hundreds of feet into gulches before regaining mastery of their skip. One officer reported a single drop of approximately 350 ft. All other flights were made on three days.

The report states that the flights were substantially carried on in spite of the difficulties and continued danger, and that they were made without incident, reflected that the Group was trained and maintained, and is prepared to carry out its mission.

No mention is made as to whether the reconnaissance party in question was eventually located.



Half-finished "Petrel 4" experimental monoplane (750 hp, Wright E2 engine)—a plane of remarkably clean lines, good all-round performance and easy maintenance.

Orders to Officers

Capt. George W. Steele, Jr., det. Dir. Aero. to duty with Naval Attache, Paris, France.

Lt. Comdr. P. N. L. Belknap, det. Aircraft Squadrons Scouting Fleet, to Naval War College, Newport, R. I., duty in Admiralty, until January 1, 1923.

Lt. Comdr. Robert A. Hare, det. Aircraft Squadrons Battle Fleet to Dir. Aero., duty investigating flying.

Lt. Comdr. Robert P. Madsen, det. Aircraft Squadrons Battle Fleet, to Naval Air Station, Coco Solo, C. R. duty investigating flying.

Lt. Comdr. Robert H. Pusack, det. Aircraft Squadrons Battle Fleet, to Gen. Inspect. Naval Air, Central Det., McCook Field, duty investigating flying.

Lt. Comdr. Rudolph F. Wood, detached Naval Air Station Coco Solo, C. R. to Aircraft Squadrons Battle Fleet, duty investigating flying.

Lt. Comdr. Claude A. Arnsdorf, (DC), det. Dir. Shop San Francisco, to duty investigating flying.

Lt. Comdr. James C. Avery, Lt. Comdr. E. Bois, Lt. Comdr. John F. Fahey, Lt. Comdr. Marshall B. Green, Lt. Comdr. James D. Levy, Lt. Comdr. Frederick W. McMechan, Lt. Comdr. William S. Merton, det. Aircraft Squadrons Battle Fleet, to Anacostia Fleet.

Lt. Comdr. Howard F. Council, det. Aircraft Squadrons Battle Fleet to Naval Air Station, Anacostia, D. C.

Lt. Comdr. Edward J. Macmillan, (DC) det. U.S.S. Anacostia, to San Francisco.

Lt. Comdr. Zen W. Wilcox, det. Naval Air Station, Lakewood, N. J. to U.S. Helium Production Plant, Fort Worth, Tex.

Lt. Comdr. Thomas J. Stoy, det. U.S.S. Texas, to U.S.S. Anacostia.

Lt. Comdr. Alfred F. Park, det. U.S.S. Wright, to T. & B. Flying Field, Naval Air Station, Hampton Roads, Va., duty investigating flying.

Lt. Comdr. Glenn S. Holmes, det. U.S.S. Anacostia, to U.S.S. Texas.

Lt. Comdr. Walter W. Smith, det. U.S.S. Wright, to T. & B. Flying Field, Naval Air Station, Hampton Roads, Va., duty investigating flying.

Lt. Comdr. George E. Hopkins, det. U.S.S. Wright, to temp. duty under instruction U.S.S. Cheyenne.

Capt. Albert J. Berberich, det. Naval Air Station, Charleroi, Mass., to Reading Fleet.

Capt. Julian H. Estepes, det. V.P. Spain 2, Aircraft Squadrons Battle Fleet to Battle Fleet.

Marines Use Planes to Speed Up Mail

The marines at the Marine Flying Field at Marine Barrage Corp., 10, R. R. 1, Marine Corps, Hawaii, are using their planes to speed up airmail service. The use of this service by the mail is the best example of recent mail flights. On Nov. 14 a flight was made to Santiago, D. R. in record air racing time.

The plane after returning the mail, returned to the station, the plane stalled. The marines did not return to Marine Barrage Corp. until later. For the next week, a mail flight was made to Paita-na-Puerto, Hawaii, for the purpose of making a connection with the airmail service. By making this connection, the mail from the station reaches the United States within six or seven days thus being a saving of some days over the usual mail schedule.

Navy Plane Cooperates with Lighthouse Service

The Naval Air Station at Pearl Harbor, Hawaii, performed a very valuable service in the case of better navigation when an Hawaii, seaplane from that station took photographs of Kaohi Point, the Lighthouse Point, Oahu, Nov. 6. The following is quoted from a report in the *Advertiser*:

"This rock, Kaohi, on the top of an old crater, about twenty miles from the island of Oahu, Hawaii, is very inaccessible because of its position in the open sea, and because it has sheer cliffs on all sides. No one has been able to land upon it and make photographs around the only means of getting there is to take a boat which will enable the Lighthouse Service to determine the best place to attempt a landing and to place a beacon."



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PUBLISHER'S NEWS LETTER

In connection with the letter from Last, A. J., U. S.N.M., appearing elsewhere in this issue, concerning the article that appeared in *The Aeronautical Digest* over his signature, *AVIATION* was greatly annoyed over the following paragraph that appears in *The Aeronautical Digest* for December:

"The St. Louis race tables arranged by *AVIATION* (see *Flight*) were accurate and highly appreciated by aeronautical enthusiasts. *THE AERONAUTICAL DIGEST* took advantage of an opportunity to check up the scores prepared for its own readers with these tables and made *AVIATION* for the privilege."

When *The Aeronautical Digest* appreciated the St. Louis race figures from *AVIATION* without credit, it followed by the statement that it was represented at the St. Louis meet by "an Editor-in-Chief and two prominent local correspondents." As the Editor-in-Chief left St. Louis before the race, it is probable that the two correspondents decided to use *AVIATION* to check their figures. But the point that has given us concern is that one or two minor mistakes in the tables were not checked and as *The Aeronautical Digest* will be blamed for mistakes that really were *AVIATION*'s.

It is always unfortunate to have to bear the cost of one's own mistakes, but to have to bear that of another is too much. We apologize to *The Aeronautical Digest* for not furnishing them with absolutely accurate tables, but the two members of our staff who worked night and day on St. Louis to give *AVIATION* readers the necessary data that they are entitled to expect are not to be blamed for the minor slips in the tables. Perhaps, if it had not been for the wrong figures we might still be under the impression that the tables in *AVIATION* were not copied outright without credit but only used "to check up the score."

A few years ago a New York newspaper, as finding that its editorial writer was being sponsored by a contemporary, decided to put a stop to the practice by changing up the methods used by its staff. In so early edition it published a sensational account of a Cuban episode featuring the exploits of that daring and unscrupulous, though laic, Cuban, General Religio W. Thomes. Sure enough, it was the next edition of no rival the story appeared as a special dispatch from Havana. Then the newspaper industry was given one of the greatest laughs in its history. Everyone was told to read the name of the Cuban General back-to-back, commencing with his middle initial and add the last name to it stood. It is needless to say that the following season was discontinued.

The Publisher's News Letter has brought many letters of favorable comment from our readers

One of the most gratifying was from Prof. Alexander MacAdie, Director of the Illinois Institute of Technology and author of "Principles of Aeronautics." Professor MacAdie wrote that he wished, as one of the subscribers of *AVIATION* from the beginning, to do more than merely subscribe. Following the suggestion made on the page several weeks ago he sent the letter appearing elsewhere in this issue, dealing with a recent article by Captain McNamee.

It is a letter of encouragement of this kind that gives a publisher that incentive to perceive that is needed when aeronautical activities are at a low ebb. If others of our readers would write us letters on matters on which they have opinions, they would be greatly appreciated and add to the interest of the pages.

Another reader writes that while visiting the National Physical Laboratory, Washington, England, he heard the comment from some of the staff that they were sorry that *AVIATION* was not issuing the magazine side of aeronautics unencumbered by the cost of the past. The reason for that was plain. A publication must carry a definite program of advertising, paying for editorial space. *AVIATION* carries a definite program of advertising, paying for editorial space. *Wright-Patterson*, Standard, Goliad, L.W.F., and others were using our pages for advertising, the size of the issues could be larger. But now, with only a few companies promoting the cause of aviation through the trade press, our space is limited and articles must be brief or omitted altogether.

The other reason is that the National Advisory Committee for Aeronautics is now publishing excellent technical papers that are not only complete but very well edited. These are available to our readers and those who are interested in specialized branches of aeronautics can find in them the information they desire. This function of the N.A.C.A. is one that has brought to it the unanimous approval of everyone interested in American aviation. Since the publication of technical articles of the kind that used to appear in *AVIATION* would cover the same subjects, fewer of them are used and the space that gained is largely devoted to the world news of the field, with the particular object of being of service to the users of aircraft.

With the opening of Congress and the efforts being made by the Army, Navy and Air Mail for enlarged appropriations it is to be expected that a more hopeful attitude will make itself felt in the aeronautical industry. Some one recently in Washington said that the new slogan of the service was "Fill the Hangars." This spirit is greatly to be commended.

IN FAR AWAY CHINA

AVIATION Readers Encircle the World

The following letter has been received from Canton, China. It is typical of many that are received from readers throughout the world and shows how indispensable AVIATION is if a complete picture of the progress of American aeronautics is desired.

From an old Subscriber

"Enclosed please find ten dollars for which please renew my subscription to AVIATION. In the event that you have discontinued sending the magazine to my old address, please if possible send me the copies I have missed. AVIATION has been my greatest authority source the quasi-curtain days of '16, so I visited manager of the Walks building scenes during the war and later as field manager of division of the Air Mail and now as aeronautical advisor to Dr. Sun Yat Sen in far away China."

"I have been a subscriber to your magazine since it was first published, in fact, I still have my first copy, now seven years old as well as all copies up until the time I came here."

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On Oct. 6, 1923—at St. Louis U.S.A., the Navy Curtiss Racers with Curtiss D-12 A Motors took first and second places, winning the PULITZER TROPHY for the third successive year and again establishing a new world's speed record,—more than four miles per minute!

STILL MORE RECORDS

On Nov. 4, 1923—at Mitchel Field, Lieut. H. J. Brow, U.S.N. in the Navy Curtiss Racer beat Lieut. Maugban's record of last year by establishing a new World's Record of 265.69 miles per hour.

On Nov. 4, 1923—at Mitchel Field, Lieut. A. J. Williams, U.S.N. in the Navy Curtiss Racer beat Lieut. Brow's record and established 266.58 miles per hour as the fastest speed that man has ever achieved.

All these records were made with Curtiss D-12 Motors which have functioned perfectly during the gruelling tests that such performances require.

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